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"Industrial Estates and Regional ^{Economic} Development: A Case Study of the Prai Industrial Area, Penang"

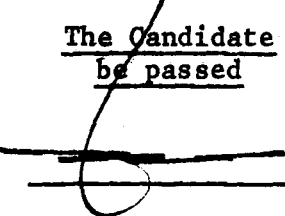
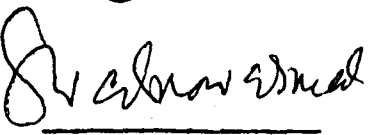

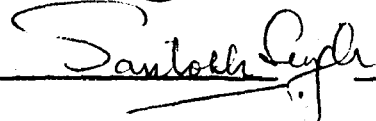
submitted by Puan Chi Seck Choo in fulfilment of the requirements for the degree of Doctor of Philosophy hereby confirm that:-

- (i) We met on Friday, 8 August 1980 and submitted the candidate, Puan Chi Seck Choo to an Oral Examination in accordance with the Provisions of Part (A) Clause 8(3) of the Higher Degree Programme Requirements:-

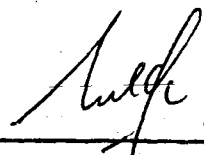
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I, Noel Alfred Ogle, in my capacity as Secretary to the said Thesis Examination Panel, do hereby confirm that the Panel after full consideration of the recommendations of the External and Internal Examiners and of the individual recommendations of its members, has agreed to recommend to Senate that the candidate, Puan Chi Seck Choo be awarded the degree of Doctor of Philosophy.


(Secretary)

Date: 8 August 1980

INDUSTRIAL ESTATES AND REGIONAL ECONOMIC DEVELOPMENT:
A CASE STUDY OF THE PRAI INDUSTRIAL
AREA, PENANG

by

CHI SECK CHOO

Thesis submitted in fulfilment of
the requirements for the degree of
Doctor of Philosophy

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ABBREVIATIONS

ASEAN	Association of South East Asian Nations
FTZ	Free Trade Zones
GDP	Gross Domestic Product
IBRD	International Bank of Reconstruction and Development
ICC	Integrated Coconut Complex
IE	Industrial Estate
ITC	Integrated Timber Complex
I-O	Input-Output
MIDA	Malaysian Industrial Development Authority
MIDF	Malayan Industrial Development and Finance Corporation
MIEL	Malayan Industrial Estates Limited
MNC	Multinational Corporation
NPM	North Peninsular Malaysia
PIA	Prai Industrial Area
PDC	Penang Development Corporation
PPC	Penang Port Commission
SEDC	State Economic Development Corporation
UNIDO	United Nations Industrial Development Organization

ABSTRAK

Estet-estet perusahaan boleh menjadi alat yang berkesan bagi desentralisasi industri berasaskan kepada potensi mereka berfungsi sebagai pusat ekonomi di kawasan-kawasan yang kurang maju. Kemunculan pentingnya rancangan pembangunan wilayah di Negara-negara yang sedang membangun melambangkan keperluan untuk melakukan lebih banyak kajian-kajian empirikal yang dapat menghuraikan dan menganalisis bagaimana estet-estet perusahaan dapat dijadikan komponen-komponen yang relevan dalam pembangunan wilayah.

Malaysia, seperti lain-lain Negeri yang sedang membangun, telah memulakan satu rancangan estet perusahaan yang besar, dimana pada masa 1970an telah bertindih dengan isu desentralisasi industri. Satu aspek yang penting dalam Polisi Ekonomi Baru ialah percubaan untuk menyusun semula ketidakseimbangan spatial dalam ekonomi Malaysia melalui proses mengagih semula kegiatan-kegiatan industri ke kawasan-kawasan yang mundur. Walaupun industri-industri telah ditaburkan di estet-estet perusahaan yang

terdapat diseluruh Malaysia, kecekapan industri-industri untuk membangunkan ekonomi wilayah masih di persoalkan.

Satu kajian kes tertentu di kawasan Perusahaan Perai Pulau Pinang menunjukkan bahawa industri-industri yang terletak di estet-estet perusahaan dan Zon Perdagangan Bebas itu hanya mempunyai pertalian wilayah, secara sektor dan ruang, yang terhad. Kesan-kesan pengganda tempatan mereka adalah kecil dari segi magnitud dan kebanyakan kegiatan mereka adalah terasing daripada keperluan dan sumber-sumber diwilayah perletakan industri tadi. Proses perkembangan industri di estet-estet perusahaan itu tidak bersifat 'self-generative' dan 'self-perpetuating' dan industri itu tidak cukup daya penggerak untuk mendatangkan kemajuan dan pembangunan kepada wilayah itu.

Salah satu sebab kekurangan kecekapan estet-estet perusahaan dalam pembangunan wilayah ialah kekurangan sebuah rancangan yang sesuai yang dapat menghubungkan industri-industri dengan ekonomi wilayah. Pergantungan yang berlebih-lebihan terhadap firma-firma asing dan penghindaran sektor perusahaan tempatan mengwujudkan

pertalian organisasi yang mengakibatkan pula kesan-kesan pengganda asing yang menghubungkan estet-estet perusahaan diatas dengan sistem ekonomi dunia. Maka, jelaslah terdapat satu kekosongan polisi dan ketiadaan perancangan yang stratejik untuk menjadikan rancangan estet perusahaan beroperasi dengan lebih berkesan bagi tujuan-tujuan pembangunan wilayah.

Tesis ini mencadangkan satu penciptaan semula rancangan estet perusahaan. Rancangan yang masih dilaksanakan di Malaysia masih kini harus dibebaskan dari kelemahan dan dikelolakan semula dengan menitekberatkan aspek-aspek proses perindustrian yang lebih "self-generative" dan "self-perpetuating" melalui menggalakkan sektor perkilangan tempatan. Dengan cara ini barulah estet-estet perusahaan boleh menjadi komponen-komponen yang berkesan dalam pendakatan "growthpole" kepada pembangunan wilayah.

ABSTRACT

Industrial estates can become effective instruments in industrial decentralization strategies on the basis of their ability to act as economic nuclei in less developed regions. The emerging importance of regional development planning for developing countries implies the need to build more empirical studies which can describe and analyse how industrial estates can be particularly relevant as components in regional development.

Malaysia, like most other developing countries, embarked on an ambitious industrial estate programme which in the 1970s became saddled with the issue of the dispersal and decentralization of industries. One significant aspect in the New Economic Policy is the attempt to redress spatial imbalances in the Malaysian space economy via the redistribution of industrial activities to "less developed areas". As industries are being dispersed to various industrial estates throughout

Malaysia, the question still remains of their effectiveness in the economic and social development of the region within which they are located.

A case study of the Prai Industrial Area in Penang shows that the industries located in industrial estates and Free Trade Zones extend limited regional linkages sectorally and spatially. Their local multiplier impact is small in magnitude and many of their activities are divorced from the needs and resources of the region in which these industries are located. The growth processes of the industrial estates are neither self-generative nor self-perpetuating and the industries are also not propulsive enough to lead the region forward in development.

Among the reasons for the lack of effectiveness of industrial estates on regional development is the absence of a proper programme and strategy which can relate the industries to the regional economy. The over-independence on foreign firms and the retardation of the local manufacturing sector lead to organizational linkages which created extra-local multiplier impacts and which in turn link the industrial estates to the world economic order.

There is a policy vacuum and the lack of strategic planning to make industrial estates more operative for regional development purposes.

The thesis calls for a reformulation of the industrial estate programme as practised in Malaysia today. The programme must be purged of its many weaknesses and be radically reorganized with special emphasis on the need to create self-generative and self-perpetuating industrial development processes in industrial estates through the special nurturing of the local manufacturing sector. Only with such changes can industrial estates become effective components in the 'growthpole' approach to regional development.

CHAPTER 1

INDUSTRIAL ESTATES IN REGIONAL DEVELOPMENT PLANNING IN DEVELOPING COUNTRIES

The industrial estate has become a significant phenomenon in local and regional industrial development because of its role as a basic propulsive force in generating developmental impulses. The industrial estate programme has been a popular strategy of locational industrial policy in developing countries today. In terms of its utility and usage, it is almost similar to the growth centre approach which had been utilized in development planning in the developing countries. However, the use of the industrial estate programme as a tool in industrial location and development has not been thoroughly evaluated.

The experience with industrial estates as a tool in industrial location and development had been rather mixed

and implemented quite extensively in developing countries. Industrial estates had mainly performed many functions which may be grouped into four categories, namely, as a strategic tool in the deconcentration and development of new towns; ² as infrastructure and policy instruments for the location and relocation of firms; together with the growthpole approach, ³ as part of the decentralization programme from primate metropolitan areas in developing countries and finally as a strategic tool in rural industrialization programmes.

These four categories of functions are but different components of regional development in advanced countries. It is necessary to examine how and to what extent industrial estates have become incorporated into the overall development strategy in developing countries. This would require a discussion of the origins of the concept of industrial estates in the advanced countries where the ideas of industrial estates first emerged, to be later adopted and modified by developing countries.

1. The Origins and Spread of Industrial Estates In Advanced Countries

Industrial estates were first conceived as a possible solution to the problems which resulted from the concentration of the industrial activities in metropolitan regions such as Chicago in the United States and

Manchester in Britain. They were later associated with the development of new towns which were attempts made by the government in these countries to relieve congestion in their other cities.

Known as industrial "parks", "estates", "districts" and "zones", these industrial sites were quickly taken up by industrialists and became very successful in attracting industries and building up new industrial areas. The success of the industrial estate programme, however, had depended on the high level of industrial vocation in the regional environment of advanced countries. Industrial estates became an integral part in the process of industrial spatial dynamics due to their close ties through industrial linkages with urban-manufacturing centres.

The spread of new manufacturing industrial plants to areas on the periphery of cities and towns on the approaches of big cities was a phenomenon in the early 1960s in many major cities such as Chicago, Toronto, Boston, London, Paris, Cologne, Stockholm and Tokyo.¹ Industrial estates were conceived as a significant response to the dynamics of the spatial shift of

1 Alexandersson, G. (1967), Geography of Manufacturing, Prentice-Hall Inc. London, p. 15.

manufacturing plants. In the spread from city centre to periphery, some industries were established in commercially and privately organized industrial districts. In the United States, these areas provided a comprehensive infrastructure, including buildings of standard designs, railway sidings, streets and parking, water, gas, electricity, sewage and drainage systems.² The siting of manufacturing firms in such industrial districts obviated the involved process of acquiring and converting agricultural land for manufacturing purposes. In addition, a central management took care of the administration, zoning and servicing of such districts. These districts attracted especially the small or medium sized establishments and, in many cases, relationships were strong among firms located in the same districts.

"In a carefully planned industrial park, many firms do business with each other, just as in a downtown manufacturing area".³

Britain was the pioneer in the development of the industrial estate. The Trafford Park Industrial Estate, located close to the terminal docks of the Manchester Ship

2 Conway Research Incorporation, (1960), Industrial Development Manufacturers Record: Industrial Parks, Atlanta.

3 Mayer, H. (1964), "Centex Industrial Park: An Organized Industrial District" in Thoman R. and D. J. Patton, eds., Focus on Geographical Activity, McGraw Hill, New York.

Canal, was developed privately as early as 1896 and it is still the largest industrial estate in Britain today. The estate attracted the branch and subsidiary plants of the parent establishments located in Manchester and through such linkage effects, the estate was quickly occupied and "off and running".⁴

Most of the original industrial estates that were found in Britain and the United States in the early 1930s were started by private concerns such as railroad companies and local Chambers of Commerce which sold sites to entrepreneurs whose firms were located in urban areas where there was a pent-up demand for land.⁵ Industrial estates were thus commercially profitable enterprises. The concept of industrial estates offering sites and facilities did not catch the attention of governments in advanced countries until 30 years after the establishment of Trafford Park. By the late 1930s, industrial estates were soon incorporated into the wider industrialization strategies of these countries.

4 Bredo, W., (1960), Industrial Estates, Tool for Industrialization Free Press, Glencoe Illinois, p. 9.

5 Alexander, P.C., (1968), "Types of Industrial Estates" in the United Nations, Promotion of Small-Scale Industries in Developing Countries, United Nations, New York.

The logic behind the adoption of the industrial estate programme as an industrial development strategy was simple. It was clear that the industrial estate programme could be a powerful tool in the intervention of the market processes of industrial agglomeration. In the spatial manipulation process, they could be used to divert industries from existing crowded centres and to attract industries to specific areas. The first industrial estates in regional planning were mainly used to promote general growth in problem areas. Britain started its industrial estate programme officially by implementing industrial estates as an attempt to develop "special areas" which were economically depressed areas with high rates of unemployment.⁶ Italy established seven industrial estates from 1917 - 1949 in its southern region to counteract the concentration of development in the highly industrialized regions in the north. 33 industrial districts had been demarcated by 1939, in the United States.⁷ The idea soon caught on in the Netherlands, France, Germany, Belgium, Denmark, Sweden, Switzerland, Ireland and Spain where industrial estates were developed under the sponsorship of municipalities plagued by industrial congestion or which suffered industrial inertia. From

6 Bredo, W., (1960), op.cit. p.10.

7 Bredo, W., (1960), op.cit. p.15.

Britain, the idea spread to Ireland and then to the Commonwealth countries, including Canada. In 1962, France built a pilot industrial park with six factories under the French Commissariat au Plan.⁸

Most of the industrial estates in advanced countries were devised for small-scale industries. These industrial estates shared common characteristics in that they were defined as:-

"a planned clustering of industrial enterprises, offering standard factory buildings, erected in advance of demand, and a variety of services and facilities to the occupants; as a rule, the estate would serve principally to promote small-scale enterprises."⁹

In contrast, ordinary industrial areas or zones did not guarantee such comprehensive supporting infrastructure and other facilities as were made available in industrial estates. Facilities such as buildings, assistance in the hiring and training of labour, the availability of research in marketing and other formalities were considerable and appreciable inducements to attract expanding industries to these industrial estates.

8 United Nations Industrial Development Organization, (1968), Industrial Estates in Europe and the Middle East United Nations, New York.

9 Ibid., p.6.

The industrial estates in advanced countries could be deemed to be successful in that they were fully occupied all the time¹⁰.

The success of the first industrial estates was generally attributed to factors such as the increasing demand for land. Diseconomies of scale were experienced in the major metropolis and the soaring land prices forced entrepreneurs to seek alternative and cheaper sites. Although the industrial estates were located in less developed areas, they were nevertheless in close proximity to the main urban centres and had transportation and links which ensured their viability.¹¹ Success also depended on the existence of an environment which reflected an 'industrial vocation'¹² in advanced countries. In such countries, industrial regions were composed of industries which were linked over short distances.¹³ Industrial estates automatically became favoured sites for

10 Alexandersson, G., (1967), op.cit. p.15.

11 Lefebvre, L. and M. Datta - Chaudhari, (1971), Regional Development: Experiences and Prospects in South and Southeast Asia, Mouton, Paris.

12 Ibid p.178.

13 See Warren, K., (1978), "The Industrial Complex and the Territorial Production Complex in the U.K." in Bandman, M.K., ed., Projection of the Formation of Territorial Production Complexes, USSR Academy of Sciences, Novosibirsk, p.96-100.

the location of expanding industrial activities, spatial search being a two way process, with areas looking for industries and firms searching for locations.¹⁴

The medium and small-scale industries located in these industrial estates were essentially the manufacturing plants of larger organizations¹⁵, and although they were branch and subsidiary firms, their functional and organizational relationships with the fortunes of exploding industrial metropolises ensured a self-cumulative growth via industrial linkages and linkage effects. Even when industrial estates were located in depressed areas, the production units remained part of the country's regional industrial network and they could establish direct links with other industries and export houses.¹⁶ Industrial estates were nothing more than spatial and organizational components of the existing industrial regions and productions systems and thus became an integral part of the industrialization processes of advanced countries.

14 Cyert R.M., and J. G. Marsh, (1963) A Behavioral Theory of the Firm, Prentice Hall, Englewood Cliffs. p.8.

15 Bredo, W., (1960). op cit p.16.

16 Lefebvre L., and M. Datta - Chaudhari op. cit., p.184.

2. The Adoption of the Industrial Estate Programme by Developing Countries

The implementation of the industrial estate programme in developing countries was a more complicated and more complex phenomenon compared to the experience in advanced countries. In advanced countries, the functions of the industrial estate first as infrastructure to promote industrial deconcentration, then as a tool to encourage the growth of local small-scale manufacturing and finally, as a strategy to locate and relocate industries for regional development purposes were interlinked and interwoven as components which eventually made them an effective tool in regional development. For developing countries, their lower industrial performance, diverse industrial objectives and lack of regional planning experiences and strategies prevented the complete adoption of the industrial estate programme and their efficient incorporation as a regional development tool. The developing countries took in the different functions of the industrial estate programme separately and step by step developed and modified their industrial estates, first as a general infrastructure to build up their industrial base, second, as a tool in decentralization programmes from primate cities and finally, as a tool in rural development strategies.

Unlike the advanced countries, the developing countries lacked an industrial base in their economic structure so that when they adopted the industrial estate concept they were more concerned with its usefulness as a tool for promoting industrial growth than with the problem of congestion in their metropolitan cities. Without any exception, all developing countries adopted the industrial estate programme when they attempted to embark on a more vigorous industrial strategy.¹⁷ India adopted the industrial estate programme extensively and within 10 years established 486 industrial estates.¹⁸ Several Southeast Asian countries adopted it in the 1950s to support the import-substitution policies which they implemented.¹⁹ Likewise, industrial estates soon started in South America and the Middle East to promote the industrial growth of these countries.

17 For a review of industrial estates in developing countries, the most comprehensive reports come from studies made by the United Nations Industrial Development Organization, including: (1961), Establishments of Industrial Estates in Underdeveloped Countries; (1962a), Industrial Estates in Asia and the Far East; (1962b), Industrial Estates: Policies, Plans and Progress; (1966), Consultative Group on Industrial Estates and Industrial Areas on Arab Countries of the Middle East in Beirut, Lebanon; (1968), Industrial Estates in Europe and the Middle East; (1977), The Effectiveness of Industrial Estates in Developing Countries, United Nations, New York.

18 Lefebvre L and M. Datta - Chaudhari, (1971), op.cit p.178.

19 UNIDO, (1962), op. cit., (1977), op.cit.

These first industrial estates in the developing countries performed other functions apart from the promotion of industrial growth. They served to create industrial employment generally.

Some of the industrial estates were also established to cater for small-scale industrial projects such as in India²⁰ and Indonesia.²¹ However, in time, more supplementary functions were added. For Pakistan²² and Indonesia, there was also the overriding policy to improve the quality and productivity of their industries through the industrial estate programme. Training centres were made available in these estates.

When import-substitution policies failed to generate a catalytic impact on the economy, most developing countries expanded their industrial estate programme to include special types of industrial estates designed to attract foreign capital and export-oriented industries. Thus Free Trade Zones or Export Processing Zones along the lines of the Shannon Airport Free Trade Zones were started in

20 Somasekhara, N., (1975), The Efficacy of Industrial Estates in India, Vikas House Pte. Ltd., Delhi.

21 UNIDO, (1962) op.cit.

22 UNIDO, (1967) op.cit.

Taiwan, the Philippines and Malaysia.²³ In these places, goods left and entered the areas free from customs and excise duties.

By the 1960s most developing countries had established these industrial estates within or near their primate cities and larger towns. With adequate urban-infrastructure support, most of the industrial estates had no difficulty in taking off and were quickly occupied by industries. In general, these industries in the industrial estates successfully increased the export earnings of the country, created new employment in the local area and enlarged the industrial base and functions of cities and ports within or near which these industrial estates were located. In general, they successfully served to create and sustain overall industrial growth for the nation and brought a sharp rise in gross domestic product.²⁴

One outstanding reason for the rapid success of these urban-based industrial estates in developing countries was their attraction to and complete domination by foreign-based enterprises. Unlike those industrial estates in

23 UNIDO, (1977), op.cit.

24 UNIDO, (1977), op.cit. p. 6.

advanced countries which had served to promote small-scale manufacturing, these industrial estates and especially the FTZs of developing countries became the focus of large scale enterprises run by foreign organisations. This development had been the result of "pull factors" implemented in the types of industrial policies associated with developing countries and the "push factors" which originated from advanced countries.

Developing countries traditionally had a small and limited indigenous industrial base and were the industrial raw material suppliers of advanced countries.²⁵ These industrial raw materials were traditionally exported even for first stage processing. In their desire to check the dependence on export commodities which led to the outflow of earnings and to meet employment targets for their ever growing population, developing countries switched to industrialization. This occurred especially in the early 1960s. In the attempt at rapid industrialization, developing countries provided "pull factors in the form of incentives (one of which was the industrial estate) to attract foreign capital. Most developing countries argued for and supported an "open door" economic

25 Berry, B.J.L., (1978), The Systems of Economic Geography, Prentice-Hall, Englewood Cliffs. New Jersey, Chapter 1

policy²⁶ because there were few other alternatives. Developing countries suffered basically from the vicious cycle of underdevelopment in their industrial sector. The lack of funds for capital investment, due to leakage of economic surplus to advanced countries, led to a lack of modern, locally financed enterprises. The development of local expertise, skill and entrepreneurship in turn were suppressed. The market for industrial goods at intermediate levels of production was limited. Thus a catch-as-catch-can policy of attracting industries was generally practised by developing countries to break the vicious cycle of underdevelopment.

As developing countries sought instant industrialization, events in advanced countries provided the essential "push" factors to respond enthusiastically to that call. For the past 30 years, the adoption by western entrepreneurs of mass production techniques had resulted in the expansion of the scale of the industrial plant, which demanded an increase in their capitalization and growth in the size of the firms. Thus firms evolved into the

26 Helfgott R.B., and S. Schiavo Campo, (1970), "An Introduction to Industrial Planning" in Industrialization and Productivity, Bulletin No. 16, United Nations, New York, p.5-34.

multi-plant, multi-functional, multinational as well as multi-locational organisms where they

"forge backward, forward linkages not only with other manufacturing activities but with primary, tertiary and quaternary (research and development) activities."²⁷

The growth of the Marshallian firm into a larger organism, coupled with the stringent pollution laws that subsequently were enforced and the rising costs of labour in advanced countries, made developing countries attractive targets for the location of their new processing points and manufacturing plants. Such plants also tended to be large-scale, capital-intensive and of the "last types". They were normally linkage-free, exogenously oriented in raw materials and markets with highly organized positive feedback loops to parent firms in the host nations. The growth of seashore industrial activities is in fact part of the strategy of MNC operations in the current phase of world capitalism. The implications for spatial organization of this new international economic world order had been critically voiced by Hymer, in the law of uneven development;

"it tends to centralize high-level decision making occupations in a few key cities in the advanced

27 Hamilton, I., (1974), ed., Spatial Perspectives in Industrial Organisation and Decision Making, John Wiley & Sons, London. p.5.

countries, surrounded by a number of regional sub-capitals and confine the rest of the world to lower levels of activity and income".²⁸

The industrial growth of advanced countries supported by an extensive and ambitious urban-based industrial estate programme in developing countries complemented each other to foster the growth of industrial production systems on a global scale. Just as the first industrial estates were integral parts of larger manufacturing nuclei in advanced countries, many industrial estates in developing countries were but a global extension of the same phenomenon. These industrial estates especially lay in the path of the decentralization of industries initiated from and by advanced countries.

3. The Incorporation of the Industrial Estate Programme in Regional Development in Developing Countries

The incorporation of the industrial estate programme as a regional development tool became the next inevitable and logical step in the attempt by developing countries to decentralize industries from their primate metropolitan cities. The problem of regional disparities had become a key issue in policy formulation for subnational development planning when the experience in developing

28 Hymer, Stephen, (1975), "Multinational Corporation and the Law of Uneven Development" in Radice, H., ed., International Firms and Modern Imperialism, Penguin London, p.38.

countries showed that polarization in the major metropolitan centres had continued to such an extent that growth of per capita income in other subnational areas lagged far behind their relatively better developed metropolitan regions. This disparity was compounded by industrial concentration around the primate cities and major metropolitan centres, the depopulation of lagging regions and in-migration to the developed regions, aggravating serious urban problems such as transportation, housing and high cost of public services. To a large extent, the establishment of urban-based industrial estates had been both the cause and effect of regional disparities in developing countries. The concentration of industrial growth in large cities and towns had widened gaps in the geographic balance of industrial activities and created enclaves of development between urban and rural areas. The success of the first industrial estates in urban locations in developing countries encouraged the development of cities of low internal interaction or interdependence and low closure which were not bound together by economic flows of any magnitude but were intensely connected by linkages to cities in the outside world. Such cities functioned as outlets of city-systems and stood in a colonial relationship to other parts of the national system of cities. These "colonial enclaves" did

not interact enough with their surrounding regions to form a growth transmitting regional city-system.²⁹ For these reasons, developing countries attempted to decentralize their industries to areas away from such primate cities, by creating more and more industrial estates in smaller towns, rural areas, and remote locations in the hope that these might divert industries from the more developed to the less developed areas and thus help to redress spatial imbalances.

It was argued that by creating more and more industrial estates in the country, a successful decentralization programme could be effected. However the implementation of such programmes via the industrial estates programmes was not carefully and/or adequately conceived. In their hurry to industrialize as well as to decentralize industries, developing countries created overlapping categories of different types of industrial estates. One type was to promote industrial growth. This was established in the early 1960s. The second type of industrial estates was intended to specifically promote regional growth. The first type of industrial estates had been established to generally upgrade the embryonic structure of national manufacturing whilst the latter type

29 Pred, A., (1977), City Systems in Advanced Economies, Hutchinson, London, p.14.

was established to transform the existing patterns of regional activities. In the heyday of accelerated industrialization, both categories of industrial estates merged into a single package of promoting instant industrialization. Through the establishment of large-scale industries as leading sectors in all these industrial estates developing countries expected their region to be automatically industrialized.

The scope of such a transformation was also limited. Development was to be induced in the region through the attraction of local migrants to join the new industries and through access to services and support facilities newly available within the region. Very little attention was paid to self-generative and self-propulsive effects of such industrial estates in the regional context.

The decentralization strategy through the industrial estate programme failed generally to divert industries from primate cities to "regions" which were relatively lagging in developing countries. The ineffectiveness of the decentralization policy executed through the widespread establishment of industrial estates, could be attributed to the lack of a proper and co-ordinated programming of attracting the right types of industries suitable to generate developmental impulses in regions.

Consequently, many industrial estates in developing countries, located away from primate cities, found themselves competing for industries which were attracted to urban-based estates and locations and generally losing out in the competition. They not only failed to attract enough industries but hardly contributed to the development of "counterpoles" because of the limitations of the regional environment to respond to the needs of the industries and the overdependence on external linkages, all of which resulted in a severely limited impact by these industries in transmitting developmental impulses through the surrounding areas.

In the case of industrial estates located in the rural and more remote areas the problem was compounded by the fact that the large areas remained unoccupied for a long period of time because they failed to attract industries. The fate and status of such industrial estates is well known. By the mid 1960s the rural industrial estates in India had not been successful³⁰. In Puerto Rico the industrial estates in small communities were also reported

30 United Nations, Department of Economic and Social Welfare, (1966), Industrial Estates, Policies, Plans and Progress, - A Comparative Analysis of International Experience, New York. p.20

as failures.³¹ A study of Central American industrial estates³² showed that only the capital cities of the five countries could support the location of industrial estates. According to Lefebvre³³, in one of the most thorough studies on rural industrial estates, those located in remote rural areas, removed from industrially established or even prosperous agricultural areas, remained unutilized in spite of the subsidies offered to the entrepreneurs.

Rural industrial estates failed to attract industries, as pointed out by Lefebvre in the same study, because of their lack of supporting urban-industrial infrastructure or capital which was not normally sufficient to motivate potential investors. Industries were also not assured of ready access to local as well as national markets and to their supply points because of poor transportation. There was also the problem of insufficiency of local and national demand for their goods. This made location in remote rural areas unprofitable. The Indian example

31 Pico R. and L McCormick Lopez, (1964), Planning and Development of Puerto Rico, Inter-American Society, Mexico, p.9.

32 Duke, K.E., et. al., (1964), An Industrial Park Development Programmes for Central America, Stanford Research Institute, California p.15.

33 Lefebvre L. and Datta Chaudhari, (1971), op. cit.

"clearly demonstrates that regional industrial programmes which are not justified by sufficient local demand or linked to already established industrial regions result in waste of capital and organizational resources"³⁴.

4. Growthpole Theories and the Growthpole Approach to Regional Development

Yet, the idea of using industries to promote regional development is sound and the attempt to decentralize industries in the expectation that they will create regional developmental impulses finds conceptual support in the growthpole theories of regional development. Known generally under a "concentrated decentralization" approach, 'growthpole' theories³⁵ involved essentially a self-generative, self-perpetuating, regionally-oriented process of industrial development through the carefully programmed location and relocation of industries. With the activation of such a process, industries were not only able to divert (and thus disperse) from the major metropolises but were able by themselves to generate a catalytic impact that would lead inevitably to self-sustaining development. Even after the initial kick had been removed, interdependently and mutually derived positive feedback systems between project and region would continue.

34 Ibid. p.169.

35 Kuklinski, A., and R. Petrella, (1972), Growth Poles and Growth Centres in Regional Planning, Mouton, The Hague.

It was Perroux³⁶ who first explained the dynamics of industrial development. He was not concerned with the quantitative expansion of industries but with the process of structural changes throughout the whole economy. According to Perroux, development was unbalanced; it took place first in key nodes, from which developmental impulses spread to other objects which, being themselves well placed for further development, were likely to become more developed. The propensity of these key nodes to adopt innovations assured their development. Perroux's hypothesis however did not deal primarily with geographical space. It was Hermansen who referred specifically to the propulsive firm as

"large-scale firms, technically advanced, innovating and dominating and working on propulsive industries which have a marked capacity for inducing growth in linked industries."³⁷

Growth and development were generated because industries formed backward, and forward (vertical) and lateral linkages as they attempted to seek their input supply points and establish outlets for their output. The more local and regional the linkages, the more the effects on

36 Perroux, F., (1950), Economic Space Theory and Applications in Quarterly Journal of Economics, Vol. 64, p.84-104.

37 Hermansen, T., (1972), "Development Poles and Development Centres in National and Regional Development in Kuklinski, A., and R. Petrella, eds. op. cit. p.30.